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Joni Bosch
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Date: December 5, 2003 No. of Pages: 83

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:) Confirmation No. 3455
Joseph v. Bak et al.)
Serial No. 09/827,046) Group Art Unit 1725
Filed: April 5, 2001) Examiner Johnson, Jonathan J.
For: DIFFUSION BONDED TOOLING) Attorney Docket 82091
WITH CONFORMAL COOLING)

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

INFORMATION DISCLOSURE STATEMENT

Honorable Sir:

Pursuant to 37 C.F.R. 1.97(b), record is hereby made of information which the
Patent Office may wish to consider in connection with its examination of the above-
identified application. Copies of such information, as well as a completed PTO-1449
form and a copy of the European Search Report, are enclosed.

Respectfully submitted,



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Zeichen/Ref./Ref.

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Anmeldung Nr./Application No./Demande n°/Patent Nr./Patent No./Brevet n°.

02394037.2-2302-

Anmelder/Applicant/Demandeur/Patentinhaber/Proprietor/Titulaire

Lear Corporation

COMMUNICATION

The European Patent Office herewith transmits as an enclosure the European search report for the above-mentioned European patent application.

If applicable, copies of the documents cited in the European search report are attached.

☒ Additional set(s) of copies of the documents cited in the European search report is (are) enclosed as well.

The following specifications given by the applicant have been approved by the Search Division:

☐ abstract

☒ title

☒ The abstract was modified by the Search Division and the definitive text is attached to this communication.

The following figure will be published together with the abstract: 0001

REFUND OF THE SEARCH FEE

If applicable under Article 10 Rules relating to fees, a separate communication from the Receiving Section on the refund of the search fee will be sent later.



EPO Form 1507.0 (03.95)



European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 02 39 4037

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.C.7)
P,X	WO 01 70450 A (STEWART DAVID H) 27 September 2001 (2001-09-27) * abstract; figure 5 * * page 34, line 13 - page 37, line 21 *	1, 7, 10-14, 18-20, 23	B23P15/24 B23P15/00 B29C33/04 B29C45/73 B29C33/38
D,Y	US 5 031 483 A (WEAVER WILLIAM R) 16 July 1991 (1991-07-16) * abstract; figures * * column 6, line 62 - column 8, line 18 *	1-30	
Y	NAKAGAWA T ET AL: "LASER CUT SHEET LAMINATED FORMING DIES BY DIFFUSION BONDING" PROCEEDINGS OF THE INTERNATIONAL MACHINE TOOL DESIGN AND RESEARCH CONFERENCE, XX, XX, 22 April 1985 (1985-04-22), pages 505-510, XP000603191 * page 508; figure 5 *	1-30	
D,A	CHICCO, B: "Diffusion Bonding of AISI P20 Tool Steel" MATERIALS FORUM, vol. 16, 1992, pages 105-110, XP009019602 * page 105 - page 106 *	1-30	TECHNICAL FIELDS SEARCHED (Int.C17) B23P B29C B23K
D,A	LAVRENTYEV A I ET AL: "Ultrasonic measurement of the diffusion bond strength" ULTRASONICS, IPC SCIENCE AND TECHNOLOGY PRESS LTD. GUILDFORD, GB, vol. 38, no. 1-8, March 2000 (2000-03), pages 513-516, XP004197914 ISSN: 0041-624X * page 514, paragraph 3 *	1-30	
-/--			
The present search report has been drawn up for all claims			
Place of search MUNICH		Date of completion of the search 24 October 2003	Examiner Watson, S
<p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document</p>			

EPO FORM 1500 03/02 (p4C01)



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EUROPEAN SEARCH REPORT

Application Number
EP 02 39 4037

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
A	HOLMQUIST M ET AL: "Hot isostatic diffusion bonding of titanium alloy Ti-6Al-4V to gamma titanium aluminide IHI Alloy 01A" SCRIPTA MATERIALIA, ELSEVIER, NEW YORK, NY, US, vol. 39, no. 8, 15 September 1998 (1998-09-15), pages 1101-1106, XP004325443 ISSN: 1359-6462 * page 1101, paragraph 2 *	1-30	
A	EP 1 004 422 A (INNOVA ENGINEERING GMBH) 31 May 2000 (2000-05-31) * abstract; figures *	21	
			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
The present search report has been drawn up for all claims			
Place of search MUNICH		Date of completion of the search 24 October 2003	Examiner Watson, S
<p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document</p>			

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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO.

EP 02 39 4037

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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24-10-2003

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EPO FORM 2043

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82



ABSTRACT / ZUSAMMENFASSUNG / ABREGE

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A tool with conformal cooling channels is made by diffusion bonding several tool sections (12,14,16,18,20,22) together, which enables the cooling channels to be made in virtually any desired configuration. Once the desired configuration of the cooling channels is determined, a block of tool material in an annealed state is cut into layers. Grooves are formed in the surfaces of the layers or holes are formed through the layers such that the grooves and holes will form the cooling channels when the layers are reconstituted into the block. Indexing holes or equivalent structure fixedly locates adjacent layers when they are reconstituted, and the grooves and holes are precisely located relative to the indexing holes, thus ensuring that the grooves and holes in facing surfaces of the layers form the desired channels. The layers are then diffusion bonded by pressing them together at an elevated temperature.